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## Evaluation of Parameter Transferability of Snowmelt Runoff Model in Chandra-Bhaga Basin, India

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Snowmelt runoff is a significant component in the glacierized and snow-covered basins of the western Himalaya. Modelling is the most useful tool to quantify snowmelt contribution in mountainous rivers, but the paucity of in-situ observations makes the model calibration quite challenging and therefore model parameters are often adopted from the neighboring river basins. In the present study, we applied Snowmelt Runoff Model (SRM) in the Chandra-Bhaga Basin and Chhota Shigri Glacier Catchment in the western Himalaya. We systematically checked the transferability of the model parameters between the catchment and basin. Using snow cover area (SCA), precipitation, and temperature as inputs, the daily discharge for the Chhota Shigri Catchment and Chandra-Bhaga Basin was reconstructed over 2003–2018. The mean annual discharge was found as  $1.2 \pm 0.2 \text{ m}^3/\text{s}$  and  $55.9 \pm 12.1 \text{ m}^3/\text{s}$  over 2003–2018 for the Chhota Shigri Catchment and Chandra-Bhaga Basin, respectively. The discharge in the Chhota Shigri Catchment was mainly controlled by summer temperature and summer SCA, whereas in the Chandra-Bhaga Basin summer SCA and summer precipitation controlled the discharge. At both the catchment and basin scale, the decadal comparison revealed an increase (11% and 9%) and early commencement (10 days and 20 days) of the maximum monthly discharge over 2011–2018 compared to 2003–2010. In the Chhota Shigri Catchment, the model output is almost equally sensitive to the 'degree day factor' and 'runoff coefficient for snow,' but most sensitive to the 'runoff coefficient for snow' in the Chandra-Bhaga Basin. Even though the SRM parameters were calibrated in a data-rich Chhota Shigri Glacier Catchment, their application in the Chandra-Bhaga Basin led to a large discharge overestimation at the basin scale and was not transferable even in the same basin. We suggest to be cautious while adopting/transferring model parameters for SRM from other basins, particularly for the ungauged basins.